Amendments to the Title:

Please amend the title of the invention to read, as follows.

IMAGE FORMING APPARATUS WITH BIAS AND INTEGRAL CURRENT CONTROL FEATURES

Amendments to the Specification:

Please amend the paragraphs starting at page 2, line 12 and ending at page 3, line 8 to read, as follows.

In such an [[n]] intermediary transfer type image forming apparatus, if the transfer material P is conveyed in a state that the secondary transfer outer roller 14 is contaminated with the toner, there is a possibility of backside contamination of the transfer material P. In order to obviate such a backside contamination of the transfer material P attributable to the contamination of the secondary transfer outer roller 14 with the toner, several methods have been known.

One of the methods ~~method~~ prevents the backside contamination of the transfer material P by causing a cleaning member (not shown) to contact the secondary transfer outer roller 14 to wipe the toner contaminant. More specifically, a cleaning blade is caused to contact the secondary transfer outer roller 14, whereby the toner particles transferred onto the roller surface is cleaned to obviate the backside contamination of the transfer material P. Alternatively, it is possible to accomplish the purpose by causing an electroconductive brush to contact the secondary transfer outer roller 14 to recover electrostatically the toner particles with the brush.

Please amend the paragraph starting at page 5, line 4 and ending at page 5, line 8 to read, as follows.

In other words, these cases correspond to such a case where the toner is borne ~~beared~~ in a non-image forming area on the intermediary transfer belt 5. For example such

a case is accompanied with an occurrence of fog toner or toner patch formed between images.

Please amend the paragraph starting at page 5, line 27 and ending at page 6, line 20 to read, as follows.

This is attributable to a lesser [[less]] known amount of the toner adhered to the surface of the secondary transfer outer roller 14 than the toner transferred onto the transfer material P in the ordinary image formation. For example, in the case where the fog toner is transferred and adhered to the secondary transfer outer roller 14 and is cleaned by the reverse polarity bias voltage, a much lesser [[less]] amount of the toner than that of the ordinary toner image is electrostatically transferred from the secondary transfer outer roller 14 onto the intermediary transfer belt 5. Accordingly, it is possible to effect cleaning by applying a reverse bias voltage smaller than that at the ordinary image formation. In the case where if a transfer bias voltage identical in magnitude to that at the time of the ordinary image formation, it becomes excessively large for effecting the electrostatic transfer, thus lowering a transfer efficiency. As a result, there is a possibility that the cleaning of the fog toner is not performed effectively.

Please amend the paragraph starting at page 6, line 24 and ending at page 7, line 8 to read, as follows.

As described above, when the bias voltage of the opposite (reverse) polarity to that of [[o]] the ordinary transfer bias voltage in order to obviate the contamination with toner adhered to the secondary transfer outer roller 14 by cleaning, if the timing of applying the

reverse polarity bias voltage <u>and</u> [[an]] the magnitude thereof are not appropriately selected, there are possibilities that productivity is impaired and that cleaning failure is liable to be visualized as the toner contamination on the backside of the transfer material P.

Please amend the paragraphs starting at page 12, line 19 and ending at page 13, line 24 to read, as follows.

The image forming stations SY, SM, SC and SK include drum type electrophotographic photosensitive members (hereinafter referred to as "photosensitive drum(s)" 1Y, 1M, 1C and 1K, respectively, as an image bearing member. Each of the photosensitive drums 1Y, 1M, 1C and 1K is prepared by coating an aluminum cylinder (outer diameter: 30 mm) with a photosensitive layer of OPC (organic photoconductor) and is rotationally driven in a direction <u>shown by</u> [[of]] an arrow (a counterclockwise direction on the drawing of Figure 1) at a predetermined process speed (peripheral speed). The surfaces of the photosensitive drums 1Y, 1M, 1C and 1K are electrically charged uniformly by charge rollers (charging means) 2Y, 2M, 2C and 2K, respectively, and subjected to irradiation with laser light by exposure apparatuses (exposing means) 3Y, 3M, 3C and 3K, respectively, to form thereon electrostatic latent images of corresponding colors, respectively.

The electrostatic latent images on the photosensitive drums 1Y, 1M, 1C and 1K are developed into toner (visual) images by developing apparatuses (developing means) 4Y, 4M, 4C and 4K containing toners of yellow, magenta, cyan and black, respectively. The toner image on each of the photosensitive drums (1Y, 1M, 1C and 1K) is successively primary transferred onto an intermediary transfer belt (intermediary transfer member) 5 at

each of primary transfer stations (primary transfer nips) T1. The intermediary transfer belt 5 is extended around a drive roller 11, a tension roller 12, and a secondary transfer roller 13, and is rotationally driven in a direction shown by [[of]] an arrow R5 by the rotation of the drive roller 11 in a direction shown by [[of]] an arrow (clockwise in Figure 1).

Please amend the paragraph starting at page 16, line 12 and ending at page 16, line 15 to read, as follows.

In this embodiment, electric potentials to be applied to the photosensitive drum 1Y, the developing sleeve 42, and the primary transfer roller 6Y are [[ar]] set in the following manners.

Please amend the paragraph starting at page 19, line 27 and ending at page 20, line 16 to read, as follows.

In the case of [[o]] the ion-conductive roller, as shown in Figure 5, the roller resistance is largely changed depending on the change in temperature. This is a phenomenon caused due to a lowering in resistivity by the increase with temperature in mobility of ions as a conductive carrier and is one of characteristics of the ion conduction. On the other hand, when the ion-conductive roller is continuously driven under application of the bias voltage, the resistance value is increased. Figure 6 shows the progression of the resistance value of the secondary transfer outer roller 14 at the time of continuously driving rotationally the second transfer outer roller 14 at 20 rpm while applying thereto a current of 20 μA. As shown in Figure 6, the resistance value is changed when the bias voltage is continuously applied to the ion-conductive roller.

Please amend the paragraph starting at page 22, line 10 and ending at page 22, line 19 to read, as follows.

As described above, the resistance value of the ion-conductive secondary transfer outer roller 14 varies ~~varying~~ depending on temperature/humidity or the use for a long period of time is controlled by the ATVC, so that the predetermined voltage Vp including the divided voltage of the roller is set to an appropriate value on a case-by-case basis. As a result, it becomes possible to always set an appropriate transfer bias voltage without being dependent ~~depending~~ on the changer in the roller resistance.

Please amend the paragraph starting at page 25, line 4 and ending at page 25, line 14 to read, as follows.

As described above, even if any number of sheets of the transfer material P are secondary transferred, the cleaning bias voltage is applied only one time ~~onetime~~ in one image forming operation. As the number of sheets of the transfer material P to be subjected to the secondary transfer becomes larger, the toner contamination of the secondary transfer outer roller 14 becomes worse. Accordingly, if the reverse cleaning bias voltage is appropriately set in view of this phenomenon, the resultant cleaning performance is liable to become insufficient.

Please amend the paragraphs starting at page 25, line 24 and ending at page 27, line 3 to read, as follows.

Referring to Figure 11, as described with reference to Figure 10, the adhered toner amount of the secondary transfer outer roller 14 is increased with the increasing number of

sheets of the transfer material P to be secondary transferred. Accordingly, the magnitude of the applied cleaning bias voltage for removing the adhered toner is also required to be increased. For this reason, integrated amounts of currents of the normal bias voltage applied at the time of the ATVC the normal bias voltage applied at the time of the secondary transfer, and the normal bias voltage applied at the time of completion of cleaning sequence are calculated by an integral current detection means (not shown). More specifically, an integral current amount $\underline{\sum(I+) \times T}$ $\cancel{\sum I+\Delta t}$ is determined as a total amount of electric charges by multiplying the applied current amount by the application time.

Next, the integral current amount applied as the reverse bias voltage is determined. The integral current amount of the reverse bias voltage is given by the product of an applied current amount I- multiplied by an application time T. As the integral current amount $\underline{\sum(E-) \times T,}$ $\cancel{I- \times T,}$ a value (as an absolute value) which is not more than 25% of the integral current amount $\underline{\sum(I+) \times T}$ $\cancel{\sum I+\Delta t}$ of the normal bias voltage is set. Further, the applied current amount (I-) is set to be not more than -30 μA (as an absolute value) and the application time (T) is set to a period of one full turn of the roller. In this embodiment, the applied current amount (I-) is set to be not more than -30 μA in terms of an absolute value in order to prevent dielectric breakdown of the secondary transfer roller pair of the intermediary transfer belt 5.

Please amend the paragraph starting at page 27, line 14 and ending at page 27, line 20 to read, as follows.

The reason why the absolute value of the integral current amount $\underline{\sum(I-) \times T}$ $\cancel{(I- \times t)}$ is set to be not more than 25 % of the absolute value of the integral current amount of the

normal bias voltage $\underline{\sum(I-) \times T}$ ~~(I+Δt)~~ is because an upper limit as the amount of the reverse bias voltage for effecting appropriate cleaning is required to be set.

Please amend the paragraph starting at page 28, line 24 and ending at page 29, line 3 to read, as follows.

In this case, the amounts of the residual toner, which has not been removed by cleaning and remains on the secondary transfer outer roller 14 shown in Figure 13, at the respective application times corresponding to periods of one or plural turns of the roller <u>are</u> [[ar]] values of the ordinate of the graph shown in Figure 12.

Please amend the paragraph starting at page 30, line 24 and ending at page 31, line 2 to read, as follows.

If the current amount of the reverse bias voltage is determined, a constant-voltage bias voltage to be applied is determined <u>from</u> [[rom]] the current-voltage (I-V) characteristic of the secondary transfer station T2 obtained by the ATVC. In this embodiment, the constant-current bias voltage value was -2224 V.

Please amend the paragraph starting at page 32, line 5 and ending at page 32, line 15 to read, as follows.

The inventors have conducted <u>a</u> study as to whether the contamination problem <u>arises</u> ~~aries~~ when the number of sheets of the transfer material P is increased to what extent under such a condition that the cleaning operation with the reverse bias voltage is performed for a period of one full turn of the transfer roller after the completion of

successive image formation, e.g., it has been found that the contamination problem arises when the number of sheets of the transfer material P exceeds 250 sheets.